PATHNT COOPERATION TREATY

	From the INTERNATIONAL BUREAU
PCT	То:
NOTIFICATION OF ELECTION (PCT Rule 61.2)	Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202
Date of mailing (day/month/year) 25 May 2001 (25.05.01)	ETATS-UNIS D'AMERIQUE in its capacity as elected Office
International application No. PCT/US00/40038	Applicant's or agent's file reference 14737.733.02
International filing date (day/month/year) 16 March 2000 (16.03.00)	Priority date (day/month/year) 17 March 1999 (17.03.99)
Applicant	
JONES, Ben et al	
The designated Office is hereby notified of its election made. X in the demand filed with the International Preliminary 17 October 20 in a notice effecting later election filed with the International Preliminary 18 October 20	y Examining Authority on: 00 (17.10.00)
2. The election X was was was not was not made before the expiration of 19 months from the priority of Rule 32.2(b).	date or, where Rule 32 applies, within the time limit under

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland **Authorized officer**

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(21) International Application Number: PCT/US00/40038

(22) International Filing Date: 16 March 2000 (16.03.00)

(71) Applicant (for all designated States except US): IN-

17 March 1999 (17.03.99)

(71) Applicant (for all designated States except US): IN-PUT/OUTPUT, INC. [US/US]; Suite 200, 12300 Charles E. Selecman Drive, Stafford, TX 77477 (US).

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(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

Without international search report and to be republished upon receipt of that report.

(54) Title: SENSOR

(30) Priority Data: 60/125,076

(57) Abstract

A system for acquiring environmental information measurements. The system utilizes a sensor, a front-end circuit, a loop filter, a switch controller, and a reduced-order loop control circuit to provide reliable data measurements while providing robust system behavior. The system further includes a sensor simulator for simulating the operation of the sensor and testing the operation of the front-end circuit and the loop filter.

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(71) Applicant (for all designated States except US): IN-PUT/OUTPUT, INC. [US/US]; Suite 200, 12300 Charles E. Selecman Drive, Stafford, TX 77477 (US).

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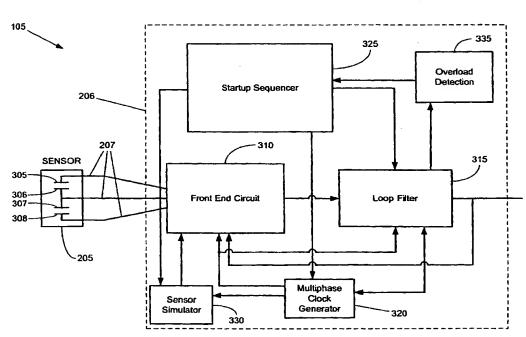
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Richard, A. [US/US]; 311 Larkspur Circle, Buda, TX 78610 (US). ABRAMS, Michael, L. [US/US]; 21 Hedwig Circle, Houston, TX 77077 (US). BROSEGHINI, James [US/US]; 6901 Fence Line Drive, Austin, TX 78749 (US). ZAVALETA, Mauricio, A. [US/US]; 1913 Holly Hill Drive, Austin, TX 78746 (US). BURCHFIELD, Mark, E. [US/US]; 9901 Mariah Cove, Austin, TX 78717 (US). MAHER, Roger [IE/IE]; 26 Wainsfort Manor Drive, Terenure, Dublin 6 West (IE). DEVOLK, Burton, A. [US/US]; 1508 Pecan Street, Cedar Park, TX 78613 (US). MAYO, Frank [US/US]; 12111 Attlee, Houston, TX 77024 (US).

- (74) Agents: MCCOMBS, David, L. et al.; Haynes and Boone, LLP, Suite 4300, 1000 Louisiana St., Houston, TX 77002 (US).
- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

[Continued on next page]

(54) Title: SENSOR



(57) Abstract: A system for acquiring environmental information measurements. The 5 system (100) utilizes a sensor, (205) a front-end circuit, (310) a loop filter (315), a switch controller (206), and a reduced-order loop control circuit to provide reliable data measurements while providing robust system behavior. The system further includes a sensor simulator (330) for simulating the operation of the sensor (205) and testing the operation of the front-end circuit (310) and the loop filter (315).

00/55593 A3



(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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	For se	ceiving Office use only		
PCT	Por rec	ceiving Office use only		
_ _ .	International Application l	No.		
REQUEST	International Filing Date			
The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.	Name of receiving Office	and "PCT International Application"		
	Applicant's or agent's file (if desired) (12 characters me	reference (14737.733.02		
Box No. 1 TITLE OF INVENTION SENSOR				
Box No. II APPLICANT				
Name and address: (Family name followed by given name; for designation. The address must include postal code and name of a address indicated in this Box is the applicant's State (that is, count of residence is indicated below.)		This person is also inventor.		
INPUT/OUTPUT, INC.		Telephone No. 281-933-3339		
12300 Charles E. Selecman Drive		Facsimile No.		
Suite 200 Stafford, Texas 77477		281-552-3157		
United States of America		Teleprinter No.		
State (that is, country) of nationality:	State (that is, country) of	f residence:		
This person is applicant all designated all design		e United States the States indicated in the Supplemental Box		
for the purposes of: States the United		America only the Supplemental Box		
Box No. III FURTHER APPLICANT(S) AND/OR (FUR Name and address: Family name followed by given name; for designation. The address must include postal code and name of address indicated in this Box is the applicant's State (that is, cour of residence is indicated below.)	a legal entity, full official	This person is:		
JONES, Ben 5900 Cedar Cliff		applicant and inventor		
Austin, Texas 78759 United States of America		inventor only (If this check-box is marked, do not fill in below)		
State (that is, country) of nationality: US	State (that is, country) 0			
This person is applicant all designated all designated for the purposes of:		ne United States f America only the States indicated in the Supplemental Box		
Further applicants and/or (further) inventors are indicated on a continuation sheet.				
Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE				
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:				
Name and address: (Family name followed by given name; for designation. The address must include postu	or a legal entity, full official al code and name of country.)	713-547-2000		
McCOMBS, David L.; KICE, Warren B.; BE BELL, James R.; BUSH, Michael S.; COI	LSON, Randall E.;	Facsimile No.		
DAVIS, JR., Michael A.; DeLEON, Ruben IRANI, Rita M.; BALCONI-LAMICA, Michael	C.; HEADLEY, Tim; ; MATTINGLY, Todd;	713-547-2600		
O'DELL, David M.; SARFATIS, Brandi W.; Haynes and Boone, LLP, 1000 Louisian	SIMMONS, David O.; La St., Ste 4300,	Teleprinter No.		
Houston, Texas 77002, UNITED STATES OF	AMERICA	resentative is/has been appointed and the		
Address for correspondence: Mark this check-box will	to which correspondence sh	ould be sent		

Sheet No. 02

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)			
If none of the following sub-boxes is used, this sheet should not be included in the request.			
Name and address: (Family name followed by given name; for a l designation. The address must include postal code and name of coul address indicated in this Box is the applicant's State (that is, country, of residence is indicated below.) DUPIE, Scott T. 309 Racoon Run Buda, Texas 78610 United States of America	regal entity, full official of residence if no State This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)		
State (that is, country) of nationality:	State (that is, country) of residence:		
This person is applicant all designated all designated	States except the United States the States indicated in the Supplemental Box		
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) BLACKBURN, Jeff 1208 Dunstan Drive Austin, Texas 78745 United States of America	This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)		
State (that is, country) of nationality:	State (that is, country) of residence:		
This person is applicant all designated all designated	States except the United States the States indicated in the sof America only the Supplemental Box		
Name and address: Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) JOHNSON, Richard A. 311 Larkspur Circle Buda, Texas 78610 United States of America	This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)		
State (that is, country) of nationality: US	State (that is, country) of residence:		
This person is applicant all designated all designated	I States except ates of America the United States the States indicated in the Supplemental Box		
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) ABRAMS, Michael L. 21 Hedwig Circle Houston, Texas 77077 United States of America	intry. The country of the		
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	d States except tates of America only the States indicated in the Supplemental Box		
for the purposes of: States the United S Further applicants and/or (further) inventors are indicated			
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Sheet No. . . 03 . .

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)				
If none of the following sub-boxes is used, this sheet should not be included in the request.				
Name and address: (Family name followed by given name: for a ladesignation. The address must include postal code and name of coulond address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) BROSEGHINI, James 6901 Fence Line Drive Austin, Texas 78749 United States of America	regal entity, full official noty. The country of the office of residence if no State This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)			
State (that is, country) of nationality:	State (that is, country) of residence:			
This person is explicant.	States except the United States the States indicated in			
This person is applicant all designated for the purposes of:	of America only the Supplemental Box			
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) ZAVALETA, Mauricio A. 1913 Holly Hill Drive Austin, Texas 78746 United States of America	regal entity, full official only. The country of the official of residence if no State This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)			
State (that is, country) of nationality: US	State (that is, country) of residence: US			
This person is applicant all designated for the purposes of: all designated the United States	States except the United States the States indicated in the Supplemental Box			
Name and address (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) BURCHFIELD, Mark E. 9901 Mariah Cove Austin, Texas 78717 United States of America	legal entity, full official nity. The country of the country of the person is: This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)			
State (that is, country) of nationality: US	State (that is, country) of residence: US			
This person is applicant all designated for the purposes of: all designated the United States	the United States the States indicated in the States indicated in the Supplemental Box			
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of con address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) MAHER, Roger 26 Wainsfort Manor Drive Terenure, Dublin 6 West Ireland	intry. The country of the			
State (that is, country) of nationality:	State (that is, country) of residence:			
This person is applicant all designated all designate	d States except tates of America of America only the States indicated in the Supplemental Box			
Further applicants and/or (further) inventors are indicated	on another continuation sheet.			

Sheet No. 04

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)			
If none of the following sub-boxes is used, th	is sheet should not be included in the request.		
Name and address: (Family name followed by given name: for a l designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country, of residence is indicated below.) DEVOLK, Burton A. 1508 Pecan Street Cedar Park, Texas 78613 United States of America	regal entity, full official of residence if no State This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below)		
State (that is, country) of nationality: US	State (that is, country) of residence: US		
	States except the United States the States indicated in the Supplemental Box		
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.) MAYO, Frank 12111 Attlee Houston, Texas 77024 United States of America	legal entity, full official noty. The country of the of residence if no State This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)		
State (that is, country) of nationality:	State (that is, country) of residence:		
US	States except the United States the States indicated in		
This person is applicant all designated for the purposes of: all designated the United States	States except the United States the States indicated in the Supplemental Box		
Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of cou address indicated in this Box is the applicant's State (that is, country of residence is indicated below.)	legal entity, full official intry. The country of the intry. The country of the introduced in the introduced in the introduced in the introduced in the introduced is marked, do not fill in below.)		
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Name and address: (Family name followed by given name; for a designation. The address must include postal code and name of con address indicated in this Box is the applicant's State (that is, country of residence is indicated below.)	legal entity, full official unbry. The country of the country of the person is: This person is: applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)		
State (that is, country) of nationality:	State (that is, country) of residence:		
	d States except the United States the States indicated in the Supplemental Box		
Further applicants and/or (further) inventors are indicated on another continuation sheet.			

Box	No.	V DESIGNATION OF STATES				
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X	EA	Eurasian Patent: AMArmenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT				
×	EP	European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT				
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			heet No. 06			
Box No. VI PRIORITY			Fu	rther prior	ity claims are indicated	in the Supplemental Box
Filing date	of earl	Number			Where earlier applicati	ion is:
of earlier application (day/month/year)	or can	ier application	national applic		regional application:* regional Office	international application receiving Office
item(1) 17 Mar 1999 (17.03.99)	60/12	25,076	US			
item (2)						
item (3)						
The receiving Office is re of the earlier application purposes of the present is	(s) (only if	the earlier appl	ication was filed	with the (Office which for the	(1)
• Where the earlier application is Convention for the Protection of					· · · · —	
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Choice of International Sear (if two or more International Secompetent to carry out the inter- the Authority chosen; the two-lette	earching Au national sea	thorities are search, indicate		d out by or		e to that search(if an earlie tional Searching Authority): Country (or regional Office
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Box No. VIII CHECK LIS	T; LANG	UAGE OF FIL	ING			
This international application the following number of she	contains	This internation	nal application is s	ccompan	ied by the item(s) mark	ked below:
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of description :	00			٠.	osited microorganism once listing in computer	or other biological materia readable form
Total number of sheets: 1	73	9. 🔂 other (s	pecify): \$3,298	Check	for filing f	ees; postcard
Figure of the drawings whice should accompany the abstract	h		anguage of filing		NGLISH	
Box No. IX SIGNATURE	E OF APP	LICANT OR A	GENT	-		
BULING IA SIGNALURI						
		erson signing and the		s person sigr	s (if such capacity is not obv	rious from reading the request).
Next to each signature, indicate the n		erson signing and the		s person sigr	s (if such capacity is not obv	rious from reading the request).
		urson signing and the		s person sigr	u (if such capacity is not obv	vious from reading the request).
		irson signing and the		s person sigr	s (if such capacity is not obv	
	name of the pe	ent		s person sigr	March	2000
Next to each signature, indicate the m	name of the pe	ent		s person sigr	March	2000
Next to each signature, indicate the m	name of the pe	ent		s person sign	March	2000
Next to each signature, indicate the m	name of the pe	ent		s person sigr	March	2000
Next to each signature, indicate the notation of the notation	All Ag	ent For			March	2000 ite)
Todd Matting 1. Date of actual receipt of the international application:	tage of the personal state of the purporter	ent.	s capacity in which the		March	2000 (te)
Next to each signature, indicate the notation of the notation	Agly, Ag	For ed to later but completing	s capacity in which the		March	2000 ite)
Todd Matting 1. Date of actual receipt of tinternational application: 3. Corrected date of actual retimely received papers or the purported international applications. 4. Date of timely receipt of the corrections under PCT Applications.	he purporte drawings of al application the require-	For ed to later but completing on:	s capacity in which the		March	2000 (te)
Todd Matting 1. Date of actual receipt of tinternational application: 3. Corrected date of actual retimely received papers or the purported international 4. Date of timely receipt of t	he purporte drawings of al application the require-	For ed to later but completing on:	s capacity in which the	use only =	March	2. Drawings: received: not received

This sheet is not part of and does not count as a sheet of the international application.

PCI	For receiving Office use only
FEE CALCULATION SHEET	
Annex to the Request	International application No.
Applicant's or agent's file reference 14737.733.02	Date stamp of the receiving Office
Applicant	
INPUT/OUTPUT, INC.	
CALCULATION OF PRESCRIBED FEES	
1 TRANSMITTAL FEE	240.00 T
2. SEARCH FEE	450.00 S
International search to be carried out by US (If two or more International Searching Authorities are competent in relation	n to the international
application, indicate the name of the Authority which is chosen to carry out the it	nternational search.)
3. INTERNATIONAL FEE	
Basic Fee The international application contains 173 sheets.	
first 30 sheets	. b1
143 × 10.00 - 1,430.00	b2
remaining sheets additional amount	1.857.00 B
Add amounts entered at b1 and b2 and enter total at B	1,857.00 B
Designation Fees The international application contains all designations.	
2 22 22	736.00 D
number of designation fees amount of designation fee payable (maximum 8)	
Add amounts entered at B and Dand enter total at I	2,593.00
(Applicants from certain States are entitled to a reduction of 75% international fee. Where the applicant is (or all applicants are) so entit total to be entered at I is 25% of the sum of the amounts entered at B	of the led, the
4 FEE FOR PRIORITY DOCUMENT (if applicable)	15.00 P
5 TOTAL FEES PAYABLE Add amounts entered at T, S, I and P, and enter total in the TOTAL	3,298.00 box TOTAL
The designation fees are not paid at this time.	
MODE OF PAYMENT	
authorization to charge deposit account (see below) bank draft	coupons
cheque cash	other (specify):
postal money order revenue stamps	<u> </u>
DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment)	
The RO/ US is hereby authorized to charge the total fee	
(this check-box may be marked only if the hereby authorized to charge any deficienc deposit account.	conditions for deposit accounts of the receiving Office so permit) is y or credit any overpayment in the total fees indicated above to my
is hereby authorized to charge the fee for p	reparation and transmittal of the priority document to the International
Bureau of WIPO to my deposit account. OR-1394 March 2000	Also the Ole
Deposit Account No. Date (day/month/year)	Signature Todd Mattingly, Reg. 40,298

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: TODD A. BYNUM MADAN, MOSSMAN & SRIRAM, P.C. 2603 AUGUSTA, SUITE 700 HOUSTON, TX 77057

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY **EXAMINATION REPORT**

		(PCT Rule 71.1)		
		Date of Mailing (day/month/year)	2 5 OCT 2001	
Applicant's or agent's file reference		IMPORTANT NOTIFICATION		
IO-1009PCT		11411	OKTANT NOTIFICATION	
International application No.	International filing dat	te (day/month/year)	Priority Date (day/month/year)	
PCT/US00/40038	16 MARCH 2000		17 MARCH 1999	
Applicant				
INPUT/OUTPUT, INC.				

- The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international
- A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
- Where required by any of the elected Offices, the International Bureau will prepare an English translation 3. of the report (but not of any annexes) and will transmit such translation to those Offices.

REMINDER 4.

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

HEZRON WILLAMS

(703) 305-4900 Telephone No.

Form PCT/IPEA/416 (July 1992)★

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IO-1009PCT	FOR FURTHER ACTION	ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)			
International application No.	International filing date (day	/month/year)	Priority date (day/month/year)		
PCT/US00/40038	16 MARCH 2000		17 MARCH 1999		
International Patent Classification (IPC) or national classification and IPC IPC(7): G01P 15/00, 9/00 and US CI.: 073/488, 514.18, 753, 170.16					
Applicant INPUT/OUTPUT, INC.					
 This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. This REPORT consists of a total of sheets. 					
This report is also accombeen amended and are the (see Rule 70.16 and Sec	This REPORT consists of a total of sneets. This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).				
These annexes consist of a to	otal of sheets.				
These annexes consist of a total of					
Date of submission of the demand	D	ate of completio	n of this report		
17 OCTOBER 2000	W.C.	06 SEPTEMB	$A \longrightarrow A \longrightarrow$		
Name and mailing address of the IPEA Commissioner of Patents and Trade	, 00	(analton vole		
Box PCT Washington, D.C. 20231			WILLIAMS		
Facsimile No. (703) 305-3230 Telephone No. (703) 305-4900			(703) 305-4900		

Form PCT/IPEA/409 (cover sheet) (July 1998)★

I. Ba	sis of the r	eport		
1 With	regard to the	elements of the internati	ional application:*	
\mathbf{x}		ional application as o		
	the descript		-	
X	pages			, as originally filed
	nages	NONE		, filed with the demand
	pages	NONE	, filed with the lette	er of
X	the claims:			, as originally filed
	pages .		as amended (toget	ther with any statement) under Article 19
	pages		, as amended (toget	, filed with the demand
	pages		filed with the letter of	,
	pages		,	
X	the drawing	gs:		
تن.	pages	1-62		, as originally filed
	pages			, filed with the demand
	pages	NONE	, filed with the letter	of
X	the sequence	ce listing part of the d	escription:	, as originally filed
	pages	NONE		filed with the demand
	pages	NONE	filed with the letter	of , filed with the demand
	pages	NONE	, 11100	
	the languag	ge of publication of the	rnished for the purposes of international application (under land for the purposes of international preliminational prelimination prelim	
لــا	or 55.3).	, 0.1 2.10 2.10	• •	
3. W	ith regard to eliminary ex	any nucleotide and/o amination was carried	or amino acid sequence disclosed in out on the basis of the sequence list	the international application, the international ting:
	contained i	in the international ap	oplication in printed form.	
			onal application in computer readab	ole form.
			Authority in written form.	
	furnished s	subsequently to this A	Authority in computer readable form	n.
	The statem internation:	ent that the subsequen al application as filed	tly furnished written sequence listing has been furnished.	g does not go beyond the disclosure in the
	The stateme	ent that the information hed.	recorded in computer readable form is	s identical to the writen sequence listing has
4 X	The amen	dments have resulted	in the cancellation of:	
T. [, Lin	description, pages	NONE	
		•	NONE	
		claims, Nos drawings, sheets /fig		
	LAJ tne	urawings, sheets /ng		made since they have been considered to go
5.	_ , ,,,,	- disalament of filed of	indicated in the Supplemental Box (Kill	made, since they have been considered to go le 70.2(c)).**
* Rep in	beyond the placement she this report a d 70.17).	e disclosure as filed, as ets which have been furr is "originally filed" ar	nished to the receiving Office in response and are not annexed to this report sin	e to an invitation under Article 14 are referred to nce they do not contain amendments (Rules 70)
				under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

III. No	on-establishment of opinion with regard to novelty, inventive step and industrial applicability
1. The condust	questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be trially applicable have not been and will not be examined in respect of:
	the entire international application.
X	claims Nos. <u>2-4, 10, 14-26</u>
	because:
	the said international application, or the said claim Nos relate to the following subject matter which does not require international preliminary examination (specify).
	the description, claims or drawings (indicate particular elements below) or said claims Nos are so unclear that no meaningful opinion could be formed (specify).
	the claims, or said claims Nos are so inadequately supported by the description that no meaningful opinion could be formed.
X	no international search report has been established for said claims Nos. 2-4, 10, 14-26.
2. A masseque	caningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid noe listing to comply with the standard provided for in Annex C of the Administrative Instructions: the written form has not been furnished or does not comply with the standard. the computer readable form has not been furnished or does not comply with the standard.

	
1. In response to the invitation to restrict or pay additional fees the applicant has:	
restricted the claims.	
paid additional fees.	
paid additional fees under protest.	
x neither restricted nor paid additional fees.	
2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule not to invite the applicant to restrict or pay additional fees.	58.1,
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is	İ
complied with.	
x not complied with for the following reasons:	
Please See Supplemental Sheet.	
\cdot \cdot	
	ļ
···	ļ
 Consequently, the following parts of the international application were the subject of international preliminary examining establishing this report: 	ation
all parts.	
x the parts relating to claims Nos. 1.	





V. Reasoned statement under Article 35 citations and explanations supportin	5(2) with regar	d to novelty, inventive step ont	or industrial applicability;
1. statement			
Novelty (N)	Claims Claims	1 NONE	
Inventive Step (IS)	Claims Claims	1 NONE	
Industrial Applicability (IA)	Claims Claims	1 NONE	
 citations and explanations (Rul Claim 1 meets the criteria set out in PCT A system for recording environmental data me "controllerincluding a front-end circuit communication interface for coupling the se 	article 33(2)-(4), easurements include a loop filtera	ding a "sensor for detecting envi multiphase clock generator" an	ronmental data" along with a d a "start-up sequencerand a
NEW CITATIONS			
NONE			

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

IV. LACK OF UNITY OF INVENTION:

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2, and 13.3 is not complied with for the following reasons:

This is a corrected copy of the Lack of Unity. Only those Groups paid for during the prosecution of Chapter I are eligible for consideration during the prosecution of Chapter II. It should be noted that no response to the Invitation to Restrict has been received todate, therefore only those claim(s) that fall within the scope of Group I will be examined.

As applicant was previously notified this International Preliminary Examining Authority has found plural inventions claimed in the International Application covered by the claims indicated below:

This application contains the following inventions or Groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim 1, drawn to a sensor system for recording environmental data measurements.

Group IV, claim 5-9, drawn to a loop filter for providing control and methods of operating.

Group VI, claim 11, drawn to a multiphase clock generator.

Group VII, claim 12-13, drawn to a sensor simulator and system for testing.

Group XIX, claim 27, drawn to a method of offsetting the effects of external acceleration forces.

and it considers that the International Application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The inventions listed as Groups I, IV, VI, VII & XIX do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.

There is no special technical feature common to each invention of the above identified Groups. For Example:

Group I: a sensor system for recording environmental data measurements comprising a sensor for detecting environmental data along with a controller including a front-end circuit, a loop filter, a multiphase clock generator, a startup sequencer and a communication interface is not the same and does not correspond to:

Group IV: a loop filter and methods for providing control comprising one or more integrators, derivative controllers, proportional controllers and a summer or to a method of operating a loop filter comprising sending a signal to the loop filter, operating the loop filter in a reduced-order mode, operating the loop filter in a normal mode or to a method of controlling the operation of a loop filter comprising holding the integrators in a reset mode, taking the integrators out of the reset mode or to a method of placing a loop filter in a reduced-order mode comprising sending a signal and holding the integrators in a reset mode; which is not the same and does not correspond to

Group VI: a multiphase clock generator comprising a digital signal generator and a data-independent clock resynchronization circuit; which is not the same and does not correspond to

Group VII: a sensor simulator comprising a filter, an input signal selector or to a system for testing the operation of a controller comprising a sensor simulator and a controller; which is not the same and does not correspond to

Group VIII: a method of controlling the operation comprising using a controller to electrostatic forces and sequentially arranging the operating states; which is not the same and does not correspond to

Group IX: a feedback control system comprising a startup sequencer and a loop filter; which is not the same and does not correspond to

Group X: a multiphase clock generator comprising a digital signal generator and a clock resynchronization circuit; which is not the same and does not correspond to

Group XI: a clock resynchronization circuit comprising a plurality of inverters, NOR, NAND, XNOR, flip-flops gates; which is not the same and does not correspond to

Group XII: a device for resampling comprising a plurality of transmission gates, NOR gates or inverters; which is not the

Interna application No.
PCT/US00/40038

11122011112	PCT/U\$00/40038	
Supplemental Box (To be used when the space in any of the preceding bo	xes is not sufficient)	
Continuation of: Boxes I - VIII		Sheet 11
same and does not correspond to		
Group XIX: a method of offsetting the effects of external ac sensor.	celeration forces comprising applying electrostat	ic forces to the
·		
		•
•		
•		

PATENT COOPERATION TREATY

PATENT COOPE	RATION TREATY
From the INTERNATIONAL SEARCHING AUTHORITY	n) DEC 2 7 2000
To: DAVID L. MCCOMBS HAYNES & BOONE, LLP 1000 LOUISIANA ST. STE 4300 HOUSTON, TX 77002 DOCKETED For Date/Time: 2-1-01 Docketed By Lee Action: Sile and 19 Amend Applicant's or agent's file reference 14737.733.02 JO-1009 PCT	PCT By NOTIFICATION OF TRANSMITTAL OF THE INTERNAT NAL SEARCH REPORT OR THE DECLARATION (P ? Rule 44.1) Date of Mailing (day/month/year) FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No.	International filing date (day/month/year)
PCT/US00/40038	16 MARCH 2000
Applicant INPUT/OUTPUT, INC.	
Filing of amendments and statement under Article The applicant is entitled, if he so wishes, to amend the When? The time limit for filing such amendments.	ents is normally 2 months from the date of transmittal of the more details, see the notes on the accompanying sheet. TPO tes land
For more detailed instructions, see the notes on	the accompanying sheet.
2. The applicant is hereby notified that no international Article 17(2)(a) to that effect is transmitted herewith.	search report will be established and that the declaration under
the protest together with the decision thereon l	additional fee(s) under Rule 40.2, the applicant is notified that: has been transmitted to the International Bureau together with the
	the protest and the decision thereon to the designated Offices. the applicant will be notified as soon as a decision is made.
4. Further action(s): The applicant is reminded of the foll	owing:
If the applicant wishes to avoid or postpone publication	ational application will be published by the International Bureau. a, a notice of withdrawal of the international application, or of the provided in rules 90 bis 1 and 90 bis 3, respectively, before the hall publication.
Within 19 months from the priority date, a demand for in wishes to postpone the entry into the national phase up	nternational preliminary examination must be filed if the applicant ntil 30 months from the priority date (in some Offices even later).
Within 20 months from the priority date, the applicant n before all designated Offices which have not been elect priority date or could not be elected because they are	nust perform the prescribed a so for entry into the national phase led in the demand or in a late election within 19 months from the not bound by Chapter II.
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 2023i	NASHMIYA FAYYA
Facsimile No. (703) 305-3230	Telephone No. (703) 305-4900



PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

	[5	G			W	P.	
	D	EC	2	7	200	00	
Ву_							

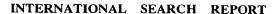
Applicant's or agent's file reference 14737.733.02	FOR FURTHER ACTION		Transmittal of International Search Report 3) as well as, where applicable, item 5 below.			
International application No.	International filing date	e (day/month/year)	(Earliest) Priority Date (day/month/year)			
PCT/US00/40038	16 MARCH 2000		17 MARCH 1999			
Applicant INPUT/OUTPUT, INC.						
This international search report has be according to Article 18. A copy is be This international search report consi	ing transmitted to the Inter-	national Bureau.	thority and is transmitted to the applicant			
X It is also accompanied by a	•		eport.			
1. Basis of the report						
			asis of the international application in the			
language in which it was file the international search w Authority (Rule 23.1(b)).	-		he international application furnished to this			
b. With regard to any nucleotid was carried out on the basis	•	nce disclosed in the in	nternational application, the international search			
contained in the internation	nal application in written for	orm.				
filed together with the inte	ernational application in co	mputer readable forn	n.			
furnished subsequently to	this Authority in written fo	orm.				
furnished subsequently to	this Authority in computer	readable form.				
the statement that the su in the	bsequently furnished writ	ten sequence listing	does not go beyond the disclosure			
	mation recorded in computer	r readable form is ide	ntical to the written sequence listing has been			
2. Certain claims were fou	Certain claims were found unsearchable (See Box I).					
3. X Unity of invention is lac	king (See Box II).					
4. With regard to the title,						
the text is approved as su	bmitted by the applicant.					
the text has been establish	ned by this Authority to rea	d as follows:				
5 Wide and a death at a second						
5. With regard to the abstract, the text is approved as su	hmitted by the applicant.					
X the text has been establish	ned, according to Rule 38.2					
6. The figure of the drawings to be	published with the abstrac	t is Figure No. 3	_			
as suggested by the appli			None of the figures.			
X because the applicant fail	ed to suggest a figure.					
because this figure better	characterizes the invention	ı.				

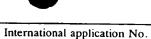


INTERNATIONAL SEARCH REPORT

International application No. PCT/US00/40038

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)			
This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:			
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:			
Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such			
an extent that no meaningful international search can be carried out, specifically: 3. Claims Nos.:			
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).			
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)			
This International Searching Authority found multiple inventions in this international application, as follows:			
See Attached FORM PCT/ISA/299.			
1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.			
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.			
3. X As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: 1, 5-9, 11-13 and 27			
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:			
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.			
150 protest accompanied the payment of additional scatter tees.			





PCT/US00/40038

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

NEW ABSTRACT

A system for acquiring environmental information measurements. The 5 system (100) utilizes a sensor, (205) a front-end circuit, (310) a loop filter (315), a switch controller (206), and a reduced-order loop control circuit to provide reliable data measurements while providing robust sysem behavior. The system further includes a sensor simulator (330) for simulating the operation of the sensor (205) and testing the operation of the front-end circuit (310) and the loop filter (315).



International application No. PCT/US00/40038

A. CLASSIFICATION OF SUBJECT MATTER					
According to International Patent Classification (IPC) or to both national classification and IPC					
LDS SEARCHED					
	· ·				
073/753; 367/140; 327/551; 375/354; 327/552,555; 5	555				
tion searched other than minimum documentation to the	extent that such documents are included	in the fields searched			
lata base consulted during the international search (na	me of data base and, where practicable	, search terms used)			
UMENTS CONSIDERED TO BE RELEVANT					
Citation of document, with indication, where ap	propriate, of the relevant passages	Relevant to claim No.			
US 6,035,694 A(DUPUIE et al.) 14 lentire document.	March 2000, (14.03.00) see	1, 5-9, 11-13 and 27			
US 6,077,345 A(EASOZ et al.) 20 June document.	e 2000 (20.06.00), see entire	1, 5-9			
US 4,805,197 A(VAN DERJAGT (14.02.89), see col. 3, lines 20-24	et al.) 14 February 1989	11			
US 4,377,822 A(NOIREL et al) 22 Abstract	March 1923 (22.03.83) see	11			
US 5,602,512 A(NERON) 11 February lines 25-37.	y 1997 (11.02.97) see col. 3,	11			
US 4,713,604 A(BECKER et al.) 15 De Fig. 2.	ecember 1987 (15.12.87) See	12, 13			
ner documents are listed in the continuation of Box C.	. See patent family annex.				
ecial categories of cited documents:	"T" later document published after the int				
cument defining the general state of the art which is not considered be of particular relevance	principle or theory underlying the inv				
lier document published on or after the international filing date	"X" document of particular relevance; the considered novel or cannot be considered.				
cument which may throw doubts on priority claim(s) or which is ed to establish the publication date of another citation or other	when the document is taken alone				
special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination					
means being obvious to a person skilled in the art "P" document published prior to the international filing date but later than "&" document member of the same patent family					
Date of the actual completion of the international search Date of mailing of the international search report					
07 SEPTEMBER 2000 01 DEC 2000					
Name and mailing address of the ISA/US Authorized officer					
	NASHMIYA FAYYAZ				
	Telephone No. (703) 305-4900	0			
	GO1P 15/00, 9/00 O73/488, 514.18, 753, 170.16; 375/361; 327/553 o International Patent Classification (IPC) or to both DS SEARCHED ocumentation searched (classification system followed O73/753; 367/140; 327/551; 375/354; 327/552,555; 5 ion searched other than minimum documentation to the ata base consulted during the international search (na UMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where ap US 6,035,694 A(DUPUIE et al.) 14 entire document. US 6,077,345 A(EASOZ et al.) 20 June document. US 4,805,197 A(VAN DERJAGT (14.02.89), see col. 3, lines 20-24 US 4,377,822 A(NOIREL et al) 22 Abstract US 5,602,512 A(NERON) 11 February lines 25-37. US 4,713,604 A(BECKER et al.) 15 De Fig. 2. er documents are listed in the continuation of Box C ceial categories of cited documents: cument defining the general state of the art which is not considered be of particular relevance lier document goals are the international filing date comment under the publication date of another citation of other cial reason (as specified) cument which may throw doubts on priority clain(s) or which is end to establish the publication date of another citation of other cial reason (as specified) cument referring to an oral disclosure, use, exhibition or other cial reason (as specified) cument referring to an oral disclosure, use, exhibition or other cial reason (as specified) cument referring to an oral disclosure, use, exhibition or other cial reason (as specified) cument referring to an oral disclosure, use, exhibition or other cial reason (as specified) cument of the international filing date but later than priority date claimed actual completion of the international search	GOIP 15/00, 9/00 of 073/488, 514.18, 753, 170.16; 375/361; 327/553 of international Patent Classification (IPC) or to both national classification and IPC DS SEARCHED occumentation searched (classification system followed by classification symbols) 073/753; 367/140; 327/551; 375/354; 327/552,555; 555 ion searched other than minimum documentation to the extent that such documents are included ata base consulted during the international search (name of data base and, where practicable UMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages US 6,035,694- A(DUPUIE et al.) 14 March 2000, (14.03.00) see entire document. US 6,077,345 A(EASOZ et al.) 20 June 2000 (20.06.00), see entire document. US 4,805,197 A(VAN DERJAGT et al.) 14 February 1989 (14.02.89), see col. 3, lines 20-24 US 4,377,822 A(NOIREL et al) 22 March 1983 (22.03.83) see Abstract US 5,602,512 A(NERON) 11 February 1997 (11.02.97) see col. 3, lines 25-37. US 4,713,604 A(BECKER et al.) 15 December 1987 (15.12.87) See Fig. 2. er documents are listed in the continuation of Box C. US 4,713,604 A(BECKER et al.) 15 December 1987 (15.12.87) See Fig. 2. er documents are listed in the continuation of Box C. See patent family annex. Liter document gualished prior to the international filing date but later than any continuent which may throw doubts on priority clainfold or which is so considered and or other claid reason its specified) Literature and the same patent for the same patent priority and comment is the analysis of the same patent priority and comment is the analysis of the same patent priority date claimed accument of particular relevance. It considered to a particular relevance. It considered to a particular relevance. It considered to a particular relevance to a particular relevance. It considered to a particular relevance to a particular relevance. It consi			



INTERNATIONAL SEARCH REPORT

International application No. PCT/US00/40038

	ntion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,206,451 À(KURSCHNER) 03 June 1980 (03.06.80) See Abstract	12, 13
X	US 4,034,801 A(BERNSTEIN) 12 July 1977 (12.07.77). See Abstract.	13
X	US 4,300,205 A(TANSUWAN) 10 November 1981 (10.11.81) See col. 7.	13
X	US 4,325,251 A(KANEGAE) 20 April 1982 (20.04.82) See Abstract.	13
X	US 4,345,474 A(DEVAL) 24 August 1982 (24.08.82). See Abstract	27
X	US 5,343,766 A(LEE) 06 September 1994 (06.09.94) See Abstract.	27
X	JP 8-62245 A(NONOYAMA et al) 08 March 1996 (08.03.96) See Abstract.	27



PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:	DAVID L. MCCOMBS
	HAYNES & BOONE, LLP
	1000 LOUISIANA ST. STE 4300
	HOUSTON, TX 77002



HAYNES & BOONE, LLP	PCI
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HOUSTON, TX 77002	NOTIFICATION OF TRANSPORTER OF
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	THE INTERNATIONAL SEARCH REPORT
	OR THE DECLARATION
	(P ? Rule 44.1)
	Date of Mailing
	(day/month/year)
Applicant's or agent's file reference	
14737.733.02 To - 100 9 PCT	FOR FURTHER ACTION See paragraphs 1 and 4 below
	· . · · · ·
International application No.	International filing date (day/month/year)
PCT/US00/40038	16 MARCH 2000
Applicant	
INPUT/OUTPUT, INC.	
1 V The continue in boundaries and about the intermediated	
1. X The applicant is hereby notified that the international search report has been established and is transmitted herewith.	
Filing of amendments and statement under Article 19: The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):	
When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.	
Where? Directly to the International Bureau of WIPO	
34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	
,	
For more detailed instructions, see the notes on the accompanying sheet.	
2. The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.	
3. With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:	
the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.	
no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.	
4. Further action(s): The applicant is reminded of the following:	
Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.	
Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).	
Within 20 months from the priority date, the applicant must perform the prescribed and for entry into the national phase before all designated Offices which have not been elected in the demand or in a late election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.	
Name and mailing address of the ISA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT	NASHMIYA FAYYAZ
Washington, D.C. 20231	\

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